

In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (amended) A blancher for heating a plurality of food products at the same time comprising:
  - a) a perforate food product receiving chamber that has a food product inlet, a food product outlet, a liquid heat transfer medium, and a plurality of food products received therein;
  - b) a food product transport mechanism received in the food product receiving chamber [for urging] that rotates thereby urging food products in the food product receiving chamber in a lengthwise direction from adjacent the food product inlet toward the food product outlet; [and]
  - c) [an orifice] a header comprised of a plurality of pairs of spaced apart orifices disposed in fluid flow communication with the heat transfer medium from which [a fluid] liquid heat transfer medium under pressure is discharged into the food product[-] receiving chamber at a flow rate of at least twenty gallons per minute per foot of length of the header;
  - d) wherein the header is oriented in a lengthwise direction and disposed outwardly of the food product receiving chamber with its orifices directing flow of liquid heat transfer medium toward the food product receiving chamber and located outwardly of a lengthwise-extending centerline of the blancher in an exiting quadrant thereof defined from where the rotating food product receiving chamber emerges from the heat transfer medium to adjacent the centerline but not passing to or beyond the centerline.

2. (amended) The blancher of claim 1 wherein:

1) the food product transport mechanism comprises an auger having a plurality of pairs of axially spaced auger flights that each has a direct-contact mechanical agitation device for agitating food products by direct contact;

[2) there is a plurality of pairs of the orifices disposed in fluid flow communication with the heat transfer medium each for discharging a fluid under pressure toward the food products;

3) the heat transfer medium is comprised of a liquid; and]

[4)] 2) the [fluid is a liquid] liquid heat transfer medium is discharged from each of the orifices at a volumetric flow rate of at least 20 gpm for increasing heat transfer to the food products.

9. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 wherein]:

a perforate food product receiving chamber having a food product inlet at one end, a food product outlet at its other end, and a plurality of food products disposed therein;

a tank in which the perforate food product receiving chamber is disposed;

a liquid heat transfer medium disposed in the tank;

[1) the] a food product transport mechanism disposed in the perforate food product receiving chamber and which comprises an auger having a plurality of pairs of axially spaced auger flights that each has a direct-contact mechanical agitation device for agitating food products by direct contact;

[2) there is] a plurality of pairs of the orifices disposed in fluid flow communication with the heat transfer medium each for discharging a fluid under pressure toward the food products; and

[3) the heat transfer medium comprises a liquid; and]

[4) the] a fluid [is] comprising a gas discharged from each of the orifices at a volumetric flow rate of at least 60 CFM for increasing heat transfer to the food products.

Please cancel claim 11.

12. (amended) The blancher of claim [11] 9 wherein the tank further comprises an outlet through which the heat transfer medium is drained to empty the tank of the heat transfer medium.

16. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 wherein]:

a perforate food product receiving chamber having an inlet, an outlet and a plurality of food products disposed therein;

a food product transport mechanism received in the perforate food product receiving chamber and comprising an auger having a plurality of pairs of axially spaced auger flights;

a tank in which the perforate food product receiving chamber disposed, the tank holding a heat transfer medium;

[1] there is] a first plurality of the orifices in fluid flow communication with the heat transfer medium, each of the orifices of the first plurality of orifices discharging a liquid under pressure into the heat transfer medium;

[2] there is] a second plurality of the orifices in fluid flow communication with the heat transfer medium, each of the orifices of the second plurality of orifices discharging a gas under pressure into the heat transfer medium; and

[3)] the heat transfer medium comprises a liquid.

19. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 wherein]:

a perforate food product receiving chamber having an inlet, an outlet, and a plurality of food products disposed therein;

a food product transport mechanism disposed in the perforate food product receiving chamber, the food product transport mechanism comprising an auger having a plurality of pairs of axially spaced auger flights;

a tank in which the food transport mechanism is disposed, the tank holding a heat transfer medium;

[1)] there is a first plurality of the orifices in fluid flow communication with the heat transfer medium, each of the orifices of the first plurality of orifices discharging a liquid under pressure into the heat transfer medium;

[2)] there is a second plurality of the orifices in fluid flow communication with the heat transfer medium, each of the orifices of the second plurality of orifices discharging a gas under pressure into the heat transfer medium;

[3)] the heat transfer medium comprises a liquid;

[4)] the liquid discharged from each of the orifices of the first plurality of orifices is discharged at a volumetric flow rate of at least 20 gpm; and

[5)] the gas discharged from each of the orifices of the [first] second plurality of orifices is discharged at a volumetric flow rate of at least 60 CFM.

Please cancel claims 21 and 22.

23. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 wherein]:

a perforate food product receiving chamber having a food product inlet at one end, a food product outlet at its opposite end, and a plurality of food products disposed therein;

a tank in which the perforate food product receiving chamber is disposed;

a liquid heat transfer medium disposed in the tank;

[1) the] a food product transport mechanism that comprises an auger disposed in the perforate food product receiving chamber, the auger having a plurality of pairs of axially spaced auger flights that each has a direct-contact mechanical agitation device for agitating food products by direct contact;

[2)] there is a plurality of pairs of the orifices disposed in fluid flow communication with the heat transfer medium each for discharging a fluid under pressure toward the food products; and

[3) the heat transfer medium is comprised of a liquid; and]

[4)] the liquid is discharged from each of the orifices at a pressure of at least 30 psi for increasing heat transfer to the food products.

24. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 21 wherein]:

a perforate food product receiving chamber having a food product inlet at or adjacent one end, a food product outlet at or adjacent an opposite end, and a plurality of food products disposed therein;

a tank in which the perforate food product receiving chamber is disposed;

a liquid heat transfer medium disposed in the tank;

[1) the] a food product transport mechanism that comprises an auger disposed in the perforate food product receiving chamber, the auger having a plurality of pairs of axially spaced auger flights that each has a direct-contact mechanical agitation device for agitating food products by direct contact;

[2)] there is a plurality of pairs of the orifices disposed in fluid flow communication with [the] a heat transfer medium each for discharging a fluid under pressure toward the food products; and

[3) the heat transfer medium is comprised of a liquid; and]

[4)] the fluid discharged from each of the orifices is a liquid at a pressure of at least 80 psi.

25. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 wherein]:

a perforate and tubular food product receiving chamber having an inlet, an outlet and a plurality food products disposed therein;

a tank that receives the perforate and tubular food product receiving chamber;

a liquid heat transfer medium disposed in the tank and in the perforate and tubular food product receiving chamber;

[1) the] a food product transport mechanism that comprises an auger disposed in the perforate and tubular food product receiving chamber, the auger having a plurality of pairs of axially spaced auger flights that each has a direct-contact mechanical agitation device for agitating food products by direct contact;

[2)] there is a plurality of pairs of the orifices disposed in fluid flow communication with [the] a heat transfer medium each for discharging a fluid under pressure toward the food products; and

[3) the heat transfer medium comprises a liquid; and]

[4)] the fluid discharged from each of the orifices is a gas at a pressure of at least 2 psi and at a flow rate of at least 100 CFM.

26. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 wherein]:

a perforate food product receiving chamber having an inlet, an outlet, and a plurality of food products disposed therein;

a food product transport mechanism disposed in the perforate food product receiving chamber, the food product transport mechanism comprising an auger having a plurality of pairs of axially spaced auger flights;

a tank in which the food transport mechanism is disposed, the tank holding a heat transfer medium;

[1)] there is a first plurality of the orifices in fluid flow communication with the heat transfer medium, each of the orifices of the first plurality of orifices discharging a liquid under pressure into the heat transfer medium;

[2)] there is a second plurality of the orifices in fluid flow communication with the heat transfer medium, each of the orifices of the second plurality of orifices discharging a gas under pressure into the heat transfer medium;

[3)] the heat transfer medium comprises a liquid;

[4)] the liquid discharged from each of the orifices of the first plurality of orifices is discharged at a pressure of at least 30 psi; and

[5)] the gas discharged from each of the orifices of the [first] second plurality of orifices is discharged at a pressure of at least 2 psi.

27. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 further comprising]:

a food product transport mechanism comprising an auger having a plurality of pairs of axially spaced auger flights;

[1)] a tank;

[2)] a perforate drum disposed in the tank and which comprises [the] a food product-receiving chamber;

[3)] a plurality of orifices including a first bank of the orifices each in fluid flow communication with the tank and pointed toward the perforate drum wherein the first bank of the orifices extends in an axial direction relative to the tank and has at least two of the orifices;

[4)] a second bank of the orifices each in fluid flow communication with the tank and pointed toward the perforate drum wherein the second bank of the orifices extends in an axial direction relative to the tank and has at least two of the orifices; and

[5)] a third bank of the orifices each in fluid flow communication with the tank and pointed toward the perforate drum wherein the third bank of the orifices extends in an axial direction relative to the tank and has at least two of the orifices.

31. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 further comprising]:

a food product transport mechanism comprising an auger having a plurality of pairs of axially spaced auger flights;

[1)] a tank;

[2)] a perforate drum disposed in the tank into which are disposed the food products, wherein the food product transport mechanism is disposed in the perforate drum and rotates in a clockwise direction during operation;

[3)] a plurality of orifices including a first bank of the orifices with each of the orifices in fluid flow communication with the tank, wherein i) the first bank of the orifices generally extends in an axial direction relative to the tank and has at least two of the orifices, ii) the first bank of the orifices is disposed between a 6 o'clock position and an 8 o'clock position; and iii) a gas is discharged through each of the orifices of the first bank of the orifices;

[4)] a second bank of the orifices with each of the orifices in fluid flow communication with the tank, wherein i) the second bank of the orifices generally extends in an axial direction relative to the tank and has at least two of the orifices, ii) the second bank of the orifices is disposed between a 7 o'clock position and a 9 o'clock position; and iii) a liquid is discharged through each of the orifices of the [first] second bank of the orifices; and

[5)] wherein the plurality of food products has a density of greater than 55 lbs/ft<sup>3</sup>.

32. (amended) A blancher for heating a plurality of food products at the same time comprising [The blancher of claim 1 further comprising]:

a food product transport mechanism comprising an auger having a plurality of pairs of axially spaced auger flights;

[1)] a tank;

[2)] a perforate drum disposed in the tank into which are disposed the food products, wherein the food product transport mechanism is disposed in the perforate drum and rotates in a clockwise direction during operation;

[3)] a plurality of orifices including a first bank of the orifices with each of the orifices in fluid flow communication with the tank, wherein i) the first bank of the orifices generally extends in an axial direction relative to the tank and has at least two of the orifices, ii) the first bank of the orifices is disposed within about 65° of a centerline that extends perpendicular to horizontal and extends through the center of the perforate drum; and iii) a gas is discharged through each of the orifices of the first bank of the orifices;

[5)] a second bank of the orifices with each of the orifices in fluid flow communication with the tank, wherein i) the second bank of the orifices generally extends in an axial direction relative to the tank and has at least two of the orifices, ii) the second bank of the orifices is disposed within a band that extends between 45° and 85° of the centerline; and iii) a liquid is discharged through each of the orifices of the [first] second bank of the orifices; and

wherein the plurality of food products has a density of greater than 55 pounds per cubic foot.

Please cancel claim 35.

Please add the following new claims:

37. A blancher for heating a plurality of food products at the same time comprising:

- a) a perforate food product receiving chamber;
- b) a food product transport mechanism received in the food product receiving chamber that rotates and urges food product in the food product receiving chamber along the food product receiving chamber;
- c) a tank that holds a liquid heat transfer medium and which receives the food product receiving chamber;
- d) a removable cover overlying the tank;
- e) a header comprised of a plurality of pairs of spaced apart orifices from which heat transfer medium under pressure is discharged into the food product receiving chamber at a flow rate of at least 20 gallons per minute per foot of length of the header;
- f) wherein the header is 1) oriented in a lengthwise direction relative to the food product receiving chamber with its orifices directing flow of liquid heat transfer medium toward the food product receiving chamber and 2) located outwardly of a lengthwise-extending centerline of the blancher in an exiting quadrant thereof defined from where the rotating food product transport mechanism emerges from the heat transfer medium to adjacent the centerline but not passing to or beyond the centerline.

38. A blancher for heating a plurality of food products at the same time comprising:

- a) a perforate food product receiving chamber;
- b) a food product transport mechanism received in the food product receiving chamber that rotates and urges food product in the food product receiving chamber along the food product receiving chamber;
- c) a tank that holds a liquid heat transfer medium and which receives the food product receiving chamber;
- d) a removable cover overlying the tank;
- e) a header comprised of a plurality of pairs of spaced apart orifices from which a gas is discharged into the food product receiving chamber at a pressure of 2 pounds per square inch;
- f) wherein the header is 1) oriented in a lengthwise direction relative to the food product receiving chamber with its orifices directing flow of gas toward the food product receiving chamber and 2) located outwardly of a lengthwise-extending centerline of the blancher in an exiting quadrant thereof defined from where the rotating food product transport mechanism emerges from the heat transfer medium to adjacent the centerline but not passing to or beyond the centerline.

39. A blancher for heating a plurality of food products at the same time comprising:

- a) a perforate food product receiving chamber;
- b) a food product transport mechanism received in the food product receiving chamber that rotates and urges food product in the food product receiving chamber along the food product receiving chamber;
- c) a tank that holds a liquid heat transfer medium and which receives the food product receiving chamber;
- d) a removable cover overlying the tank;
- e) a header comprised of a plurality of pairs of spaced apart orifices from which vapor is discharged into the food product receiving chamber at a rate of 20 pounds per hour and a pressure of 15 pounds per square inch;
- f) wherein the header is 1) oriented in a lengthwise direction relative to the food product receiving chamber with its orifices directing flow of vapor toward the food product receiving chamber and 2) located outwardly of a lengthwise-extending centerline of the blancher in an exiting quadrant thereof defined from where the rotating food product transport mechanism emerges from the heat transfer medium to adjacent the centerline but not passing to or beyond the centerline.

40. A blancher for heating a plurality of food products at the same time comprising:  
a food product transport mechanism comprising an auger having a plurality of pairs of  
axially spaced auger flights;  
a tank;  
a perforate drum disposed in the tank into which are disposed the food products, wherein  
the food product transport mechanism is disposed in the perforate drum and rotates in a  
clockwise direction during operation;  
a first bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the first bank of the orifices generally extends in an axial direction relative to the  
tank and has at least two of the orifices, ii) the first bank of the orifices is disposed between a 6  
o'clock position and an 8 o'clock position; and iii) a gas is discharged through each of the orifices  
of the first bank of the orifices;  
a second bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the second bank of the orifices generally extends in an axial direction relative to  
the tank and has at least two of the orifices, ii) the second bank of the orifices is disposed  
between a 7 o'clock position and a 9 o'clock position; and iii) a liquid is discharged through each  
of the orifices of the second bank of the orifices.

41. A blancher for heating a plurality of food products at the same time comprising:  
a food product transport mechanism comprising an auger having a plurality of pairs of  
axially spaced auger flights;  
a tank;  
a perforate drum disposed in the tank into which are disposed the food products, wherein  
the food product transport mechanism is disposed in the perforate drum and rotates in a  
clockwise direction during operation;  
a first bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the first bank of the orifices generally extends in an axial direction relative to the  
tank and has at least two of the orifices, ii) the first bank of the orifices is disposed within about  
65° of a centerline that extends perpendicular to horizontal and extends through the center of the  
perforate drum; and iii) a gas is discharged through each of the orifices of the first bank of the  
orifices;  
a second bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the second bank of the orifices generally extends in an axial direction relative to  
the tank and has at least two of the orifices, ii) the second bank of the orifices is disposed within  
a band that extends between 45° and 85° of the centerline; and iii) a liquid is discharged through  
each of the orifices of the second bank of the orifices.

42. A blancher for heating a plurality of food products at the same time comprising:  
a food product transport mechanism comprising an auger having a plurality of pairs of  
axially spaced auger flights;  
a tank;  
a perforate drum disposed in the tank into which are disposed the food products, wherein  
the food product transport mechanism is disposed in the perforate drum and rotates in a  
clockwise direction during operation;  
a first bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the first bank of the orifices generally extends in an axial direction relative to the  
tank and has at least two of the orifices, and ii) the first bank of the orifices is disposed between a  
6 o'clock position and an 8 o'clock position;  
a second bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the second bank of the orifices generally extends in an axial direction relative to  
the tank and has at least two of the orifices, and ii) the second bank of the orifices is disposed  
between a 7 o'clock position and a 9 o'clock position.

43. A blancher for heating a plurality of food products at the same time comprising:  
a food product transport mechanism comprising an auger having a plurality of pairs of  
axially spaced auger flights;  
a tank;  
a perforate drum disposed in the tank into which are disposed the food products, wherein  
the food product transport mechanism is disposed in the perforate drum and rotates in a  
clockwise direction during operation;  
a first bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the first bank of the orifices generally extends in an axial direction relative to the  
tank and has at least two of the orifices, and ii) the first bank of the orifices is disposed within  
about 65° of a centerline that extends perpendicular to horizontal and extends through the center  
of the perforate drum;  
a second bank of orifices with each of the orifices in fluid flow communication with the  
tank, wherein i) the second bank of the orifices generally extends in an axial direction relative to  
the tank and has at least two of the orifices, and ii) the second bank of the orifices is disposed  
within a band that extends between 45° and 85° of the centerline.

44. A blancher for heating a plurality of food products at the same time comprising:  
a perforate food product receiving chamber having a food product inlet at one end, a food  
product outlet at its other end, and a plurality of food products disposed therein;  
a tank in which the perforate food product receiving chamber is disposed;  
a liquid heat transfer medium disposed in the tank;  
a food product transport mechanism disposed in the perforate food product receiving  
chamber and which comprises an auger having a plurality of pairs of axially spaced auger flights;  
a plurality of pairs of orifices disposed in fluid flow communication with the heat transfer  
medium each for discharging a fluid under pressure toward the food products; and  
fluid comprising a gas discharged from each of the orifices at a volumetric flow rate of at  
least 60 CFM for increasing heat transfer to the food products.

45. A blancher for heating a plurality of food products at the same time comprising:  
a perforate food product receiving chamber having a food product inlet at one end, a food  
product outlet at its opposite end, and a plurality of food products disposed therein;  
a tank in which the perforate food product receiving chamber is disposed;  
a liquid heat transfer medium disposed in the tank;  
a food product transport mechanism that comprises an auger disposed in the perforate  
food product receiving chamber, the auger having a plurality of pairs of axially spaced auger  
flights;  
there is a plurality of pairs of orifices disposed in fluid flow communication with the heat  
transfer medium each for discharging a fluid under pressure toward the food products; and  
the liquid is discharged from each of the orifices at a pressure of at least 30 psi for  
increasing heat transfer to the food products.

46. A blancher for heating a plurality of food products at the same time comprising:  
a perforate food product receiving chamber having a food product inlet at or adjacent one  
end, a food product outlet at or adjacent an opposite end, and a plurality of food products  
disposed therein;  
a tank in which the perforate food product receiving chamber is disposed;  
a liquid heat transfer medium disposed in the tank;  
a food product transport mechanism that comprises an auger disposed in the perforate  
food product receiving chamber, the auger having a plurality of pairs of axially spaced auger  
flights;  
there is a plurality of pairs of orifices disposed in fluid flow communication with a heat  
transfer medium each for discharging a fluid under pressure toward the food products; and  
the fluid discharged from each of the orifices is a liquid at a pressure of at least 80 psi.

47. A blancher for heating a plurality of food products at the same time comprising:  
a perforate and tubular food product receiving chamber having an inlet, an outlet and a  
plurality food products disposed therein;  
a tank that receives the perforate and tubular food product receiving chamber;  
a liquid heat transfer medium disposed in the tank and in the perforate and tubular food  
product receiving chamber;  
a food product transport mechanism that comprises an auger disposed in the perforate and  
tubular food product receiving chamber, the auger having a plurality of pairs of axially spaced  
auger flights;  
there is a plurality of pairs of orifices disposed in fluid flow communication with a heat  
transfer medium each for discharging a fluid under pressure toward the food products; and  
the fluid discharged from each of the orifices is a gas at a pressure of at least 2 psi and at  
a flow rate of at least 100 CFM.